

We are IntechOpen, the world's leading publisher of Open Access books Built by scientists, for scientists

6,900

Open access books available

185,000

International authors and editors

200M

Downloads

Our authors are among the

154

Countries delivered to

TOP 1%

most cited scientists

12.2%

Contributors from top 500 universities



WEB OF SCIENCE™

Selection of our books indexed in the Book Citation Index
in Web of Science™ Core Collection (BKCI)

Interested in publishing with us?
Contact book.department@intechopen.com

Numbers displayed above are based on latest data collected.
For more information visit www.intechopen.com



Adaptive Blended Learning: A Literature of Assets

Francisco Arcos and Pablo Ortega
University of Alicante, Spain

1. Introduction

Tackling the type of approach of "blended learning" in a language based, computerized, learning environment has been the core of our research in the last few years and we have been trying to solve it by leaving the more practical activities for the "face-to-face" lectures whereas the more "mechanical" activities have been inserted into an LMS (in our case Moodle) with outstanding results. Slower and more backward students take their time and catch up quickly thanks to the LMS and the activities we give them. Thus, in a relatively short time, they level up with the brighter students and manage to acquire a deeper understanding of the subject and, in cases, excel thanks, first, to their work and dedication and, secondly, to the opportunity of working at their own pace through our LMS. Our main concern henceforth will be to adjust each subject (the subjects of the professors who are involved in this particular project) to the new realization: the work students do in Moodle and the face-to-face lectures. The success or failure will depend on the blend we make of these two elements and the activities and resources we provide. The first area on which we focused our attention was homework, one of the most controversial topics in schools, especially in primary schools, because it has become a metaphorical battlefield where parents and teachers' interests often clash. Parents spent too much time working and commuting, and that leaves them with very little time for supervising their kids' homework or for helping them while doing their tasks. On the other hand, for reasons difficult to pinpoint, the amount of homework has increased enormously in the last 20 years, with teachers having to deal with greater differences in learning styles, as well as with racial and ethnic differences.

In our opinion, e-homework (through an LMS such as Moodle) is an effective answer to many of the questions asked by both parents and teachers. Parents ask how their kids can cope with so many tasks every evening, precisely when they are most tired. Teachers ask how they can accomplish the entire syllabus and why they should teach new knowledge if whatever was learnt yesterday is not drilled. Moreover, LMS tools provide the unique possibility of combining the aims teachers pursue with homework together with the motivation students need to work with a sense of fulfillment. We review some of the main advantages of blended learning, which we consider especially useful for the troublesome area of homework.

Next, we also tackled the issue of students with special education needs. Many factors must be taken into account when we deal with students that need special education. Beyond the obvious importance of receiving personal and affective attention from teachers, it is also vital to provide them with an opportunity to learn how to use a computer and ensure they are not left behind in the digital race. In our opinion, interactive tasks (integrated in an LMS such as Moodle) can be a successful solution to many of the problems raised by students with special education needs for a number of reasons. First, these tasks are less boring, more engaging, more motivating, and often more demanding than traditional tasks. Second, besides conveying some factual information, they are also useful in teaching techniques with a great value beyond school walls. Next, interactive tasks within an LMS can be done outside the limited framework of school time because they are open and ready to be used 24/7 365 days a year, thus multiplying the opportunities for learning. Finally, these tasks can be designed to suit the singular needs of each child or group of children, which make them more effective and precise than general tasks.

2. Blending in Language Classes

The first part of our research when faced with the task of creating a language course based on blended learning, that is, face-to-face or in-person classes backed by an LMS (Learning Management System), where most mechanical exercises were to be implemented, consisted in deciding what part of the study resources would be placed in the LMS -the exercises-and what was to be done in the traditional classroom setting. A preliminary approach was to make a selection of the most common exercises practised in any traditional language classroom, corresponding to the main categories into which our teaching-learning activities would be divided, namely, morphology, syntax and phonetics. These three disciplines correspond to the six subjects which form the basis for our case study: Morphology, Syntax and Semantics, English Language CIV, English Phonetics and English for Information Technology I and II and Technical English for Telecommunications.

2.1 Methodology

The recognition that we need to take a blended approach to instruction shows that the industry is finally taking a mature, rational look at the tools we can now use. Classroom instruction will always be around because it's the best way to deliver certain kinds of skills. Likewise, text in books probably isn't going anywhere, either. Exercises and tests are useful ways to assess and build knowledge, and they always will be.

Fortunately, blended learning is a reasonable voice above the din of technologies that clamour for the attention of those delivering learning. In the past, every time a new technology came along, a collection of voices would join in a chorus of "this will be the end of classroom training" sing along. But the impending death of classroom training has always been greatly exaggerated. No one approach to training will replace classroom instruction, nor any other kind of learning, if we are going to be honest with ourselves. Although there are different examples of strategic planning models in operation in Spanish universities, the models not unexpectedly depict strategic planning as a rational deliberate process, namely direction setting, resource allocation, monitoring and control. Mintzberg (1989, p. 29-32) comments: "Virtually everything that has been written about strategy making depicts it as a deliberate process. First we think, then we act. We formulate, then we implement". He

challenges the deliberate strategy process stressing that it "precludes learning once the strategy is formulated: emergent strategy fosters it". Mintzberg however advocates both deliberate strategy and emergent strategy, thus combining control from deliberate strategy and learning from emergent strategy. These approaches could be viewed as end points on a continuum. And thus we have worked planning and learning from the outcome of our own devising and the effects of our activities on the students. Our instruction was originally planned along two central lines. One focusing on the process of knowledge acquisition and the evolution of the different activities created; and the other on the way the contents were to be delivered to the students. Both pursued the most reasonable learning strategy which consisted in evolving from very simple, passive activities, where basic recognition exercises formed the foundations of our LMS, to more complex and productive exercises where the knowledge of the learner was sought. What comes next is the resulting layout.

2.2 What makes for successful blended learning

Our approach to blended learning takes a stance as of today; tomorrow new technologies will come along that will undoubtedly make our perspective look outdated. Speech recognition engines, synchronous, live-video communication and essay-writing self-correcting engines are things that would have definitely made our blend different had they existed, and the line which divides what is to be taught in face-to-face sessions and what is to be placed in the LMS is a very thin one and may change, allowing for drastic changes in the blend as new activities in LMSs incorporate these new advances.

According to Thorne (2003 pp. 35-36), "the underpinning principles of blended learning are no different from any other form of learning. The key criteria are based on the following:

1. Identifying the core learning need.
2. Establishing the level of demand/timescale.
3. Recognizing the different learning styles.
4. Looking creatively at the potential of using different forms of learning, ie matching the learning need to different delivery methods and identifying the best fit.
5. Working with the current providers, internal and external, to identify the learning objectives and to ensure that the provision meets the current need.
6. Undertaking an education process and developing a user-friendly demonstration to illustrate the potential of blended learning.
7. Being prepared to offer follow-up coaching support.
8. Setting up a monitoring process to evaluate the effectiveness of the delivery".

2.3 The Four Stages of Learning

From a very simple and practical viewpoint, learning is a means to an end divided into four evolving stages:

Stage 1: Recognition and acquisition of basic knowledge and skills.

Stage 2: Recognition and acquisition of advanced knowledge and mastering advanced skills.

Stage 3: Capacity to apply knowledge and skills in simple situations or activities.

Stage 4: Capacity to apply knowledge and skills in advanced and complex situations or activities. To be able to find the solution to a problem and provide a novel variant applying what has been learnt.

These four stages represent a *continuum* starting out from a passive learning of basic content, to a more active implication of students in the application of knowledge which enable them to solve problems of varying complexity. The application of these stages in our LMS started off from simple explanations given in class or made available in the *resource section* in Moodle and then simple exercises and activities followed suit. As the year's course Advanced so, did the students and the nature of the activities evolved from being simple and passive, mostly multiple choice or matching exercises, to being more elaborate and complex, mostly cloze exercises and essay writing.

2.4 Content Distribution

Moodle provides different ways of delivering content. This is structured within a module called *the course format*. There are three organizational layouts: The *weekly format*, organized week by week, with a clear starting and a finishing date. Each week consists of activities. Some of them, like assignments, may have "open windows" of, say, two weeks after which they become unavailable. The *topics format* is very similar to the weekly format, except that each "week" is called a topic. A "topic" is not restricted to any time limit. You don't need to specify any dates. Finally the *social format* oriented around one main forum, the Social forum, which appears listed on the main page. It is useful for situations that are more freeform. They may not even be courses. For example, it could be used as a departmental notice board.

For our purposes we have used the *topics format* ever since the main purpose of our activities was to serve as practice to the students and whenever a deadline was needed we put that on the exercise itself, leaving the rest to be done at will. Even within the *topics format* there are two ways of distributing content. One which presents the activities by the type of exercises included and the other sets the stage or lever reached or to be reached:

Stage 1 (Elementary)

1. Listening Comprehension
2. Essay Writing.
3. Rephrasing Exercises.
4. Translation
5. Reading
6. Vocabulary

Stage 2 (Intermediate)

1. Listening Comprehension
2. Essay Writing.
3. Rephrasing Exercises.
4. Translation
5. Reading
6. Vocabulary

The second was by using the common book format of *unit 1, unit 2, etc.*, and the progress is shown as the year's course advances:

Unit 1

7. Listening Comprehension
8. Essay Writing.
9. Rephrasing Exercises.
10. Translation

11. Reading
12. Vocabulary

Unit 2

7. Listening Comprehension
8. Essay Writing.
9. Rephrasing Exercises.
10. Translation
11. Reading
12. Vocabulary

We have used the first type of content delivery up to now, and it is this year that we will be using the second format for *English Language CIV*, a course that has less in-person classes and where most of the theory and practice will be delivered using the LMS. And since the direct contact with the learners will be less frequent, we deemed necessary to have a structure where the theory led immediately to the practice and everything well classified and divided into single units of learning. The outcome is yet to be analyzed but hopefully we expect it to be as successful as the other format has been so far.

2.5 The Allocation Process

Once we had a clear picture of what we wanted and how everything was to be done, we embarked on an unrelenting quest to:

- a) Get the necessary funding support from academic authorities.
- b) Muster up all the support needed from computer engineers and set out the technological infrastructure up and ready to carry out our project.

The University of Alicante provided everything needed from the two points above and now we needed to put the methodology explained above into practice. Next, we needed to get hold of the necessary computer programs, the software, necessary to construct or build our exercises. Once we became familiar with these programs and mastered them confidently, we designed the learning strategy and the scaffolding we wanted our project to have. We must mention that for our design we contemplated the three factors that support any educational process: the laboratory (investigation and development), the library (storing) and the in-person lectures. To accomplish the first, we had the software programs: Hot Potatoes, Texttoys and Gerry's Vocabulary Teacher, plus all the activities included in Moodle. For the second, we organized a **resource centre**, within Moodle, where we had links to the most important newspapers, reference books and dictionaries, essential to help students with their exercises. We also started a FAQ section to solve technical problems and, then, there were discussions followed on in the forums and the usual individual queries resolved through email. And last but not least, we devised well-prepared, in-person classes to account for all that missing in an online language instruction such as ours: direct communication.

Henceforth, we set out to define the most common exercises that any language class would have so as to provide enough practice in our LMS. And most important of all, we made sure that the type of exercises we produced were exactly as we wanted them to be and have the desired effect on the students.

By looking at the most common textbooks that prepare for the First Certificate Examinations, ARELS, etc., we managed to produce the following list of exercises and activities to insert in the LMS:

1. Change the structure of a given sentence or phrase: rephrasing or rewriting exercises.
2. Change the structure of a given sentence or phrase: rephrasing or rewriting exercises using a word or phrase: rephrasing using a prompt word.
3. Orden de ciertas palabras en la oración. (Word Order of certain adjectives, Adverbs., etc.).
4. Listening comprehension exercises (multiple choice or cloze type exercises): Listening Comprehension with multiple options or gapped text.
5. Reading comprehension exercises (multiple choice or cloze type exercises): Reading Comprehension with multiple options or gapped text.
6. Reading comprehension exercises to seek knowledge on structure and layout.
7. Video watching and comprehension.
8. Text Completion with multiple choice or gapped texts..
9. Collocations and idioms: Gapped texts or multiple choice or matching exercises.
10. Accuracy: find mistakes in sentences or whole texts.
11. Improving grammar exercises.
12. Sentence linking.
13. Combine and put jumbled sentences in order.
14. Word formation exercises: work with compound words, suffixes and prefixes.
15. Improving Vocabulary: add adjectives, adverbs, etc., to improve a given sentence.
16. Match sentences and / or phrases to form a complete a text.
17. Identifying vocabulary: vocabulary precision.
18. Vocabulary replacement).
19. Translation.
20. Dictation.
21. Guided Compositions.
22. Free essay writing.

2.6 Activities for the in-person classes

We have elaborated a good number of exercises and practical activities per unit, most of which are self-correcting, automatically-grading (with immediate feedback) and auto-regenerating (the exercise changes every time it opens), a few are self-monitoring and collaborative, in order to be of practice before the final test at the end of the year's term. Moreover, all of these activities would constitute the source from which the final test would be extracted; both from the point of view of the practice they get as well as from the point of view of the identification of possible types of exercises that would be included in the test. This method of practice allows for more freedom on the part student and will surely save them time and money: they can work at their own pace, wherever they have an Internet connection and whenever they feel like it.

On the other hand, we also felt we needed to redefine the role of the university lecturer in the LMS and in the face-to-face classes. The former requires of a constant and prompt dedication whenever a student asks for your help either through the communications tools available in our LMS (Moodle): emails, forums, chats, etc., in the class, or in the tutorial sessions. We always dedicate the first 15 minutes of our lectures to solve problems in the LMS, especially at the beginning of every university term. The latter, the conventional classes, had to be modified because no longer were they going to be devoted to doing exercises which were on the LMS and could be practised there.

The inclusion of an LMS in our classes called for a new and a more positive attitude of the lecturer and of the students towards learning. We have broken up what is to be done in the class into three main categories:

1. Detailed account of the problems encountered in the LMS.
2. Explanation of theoretical features related to the practice.
3. Communicative and writing tasks.

As we pointed out earlier on, we, as lecturers, should start with a general revision and update students on any changes made in the activities uploaded to LMS. The feedback from the students is fundamental to be able to reshape and upkeep the LMS with activities which encourage and serve the purpose for which they have been devised. Secondly, we need to explain the theoretical background on which the practice is based. Grammar, lexis and phonetics are three categories dealt with in our lessons and our attention is focused on special cases and exceptions. Thirdly, as a consequence of the shift involved, two communicative tasks are felt to be needed in our face-to-face sessions:

1. Those related with the writing activities. Reading examples and eliciting from students the framework for our writing tasks. Whether they be paragraphs based on examples, contrast, definition (something which pertains to technical English), etc., or descriptions, narrative writing, discursive articles (general English), etc., the idea is to pull together a number of writing rubrics which will be the source for the writing activities. Using a Moodle tool called *workshop*, we set up a collaborative environment wherein, having explained and agreed upon the rubric for every specific writing task, students embark on this exhilarating, constructivist activity working in partnership to learn and monitor other fellow colleagues and help them improve their essays.

2. Those related with oral presentations and discussions. Oral, aural activities are central in our lectures and take up most of the time of our face-to-face classes. These classes are well organized and prepared so that nothing is left to improvisation. Any loose ends in oral classes lead to a secure and downright failure so we need to choose the adequate material and make sure it works well, whether it be pictures, listening comprehensions, films, etc. These activities prepare students for the oral test and they are required to practise the following aspects of oral skills:

General Conversational Activities

- Description of situations.
- Giving opinions on controversial topics.
- Discuss on a topic and give reasons.
- Identifying objects, pictures, situations, etc.
- Giving suggestions for improving situations and solving problems.
- Agree or disagree on a topic and give reasons.
- Discuss on the suitability of things and give reasons.
- Remembering things about the past.
- Talk about feelings and reactions.
- Report a story to classmates.
- Discuss on probabilities and possibilities.
- Comparison.

Specific Exercises

- Picture comparison: Spot the differences.
- Listen or watch a video and report the conversations.

- Two-minute presentation based on a topic.
- Tell a joke or a short story.
- Picture or film description.
- Raise a topic and make 2/3 students discuss it. Practice agreeing, disagreeing, etc.
- Interpreting a picture, a quotation or a situation. Predict and suggest.

2.7 The Effects of Blended Learning

Very soon we started to feel the effects and manifold energies at work in the type of instruction we were implementing, which, on the other hand, is typical of blended learning:

- In-person classes were modified and were shorter and more effective. We felt less pressure to finish up hurriedly during the classes, since we had a more elastic window of opportunity for knowledge transfer.
- The content we presented during the classroom section shifted in format. We had fewer lectures in the traditional format and had more interaction. There was less of a "sage on the stage" and more case studies, workgroups, and learner-driven content. In other words, the classroom sessions were used for conversational activities and presentations and pure information transfer and mechanical exercises which involved grammar and lexis, etc., was shifted to online delivery and practice.
- The intensity of the learning experience for the learner increased dramatically. We can safely say so far that there is an increase of the levels of learner-to-trainer questions, increased levels of learner-to-learner interactions, and more total hours of learner attention that in pure classroom delivery.

Our work, as instructors in an LMS and as lecturers, increased dramatically and depending on the number of students in the classroom, tripled because we have had to "build" the exercises, test them and put them on-line. Then, we have had to solve the many questions the students had on doing the activities, and finally prepare the face-to-face lectures, which consisted in speaking activities and developing writing abilities.

Using online learning within a blended solution helps to focus on the individual and their interaction with learning technologies using the Internet.

There are a number of advantages to be gained from using blended learning in our case:

- We, instructors, have made learning be more targeted, focused, delivered bite-size, just-in-time;
- learners can interact with their tutor/lecturer individually;
- learners can interact with their peers;
- learning materials are readily accessible anytime, anywhere and those who want to learn have a system where they can practise as long as they want;
- a variety of techniques can be utilized by maximizing different technologies. There are very few disadvantages, but there are aspects to be aware of when introducing blended learning:
 - Identify the supporting networks, both technical helplines and training support;
 - encourage learners to recognize how they learn best, and that they should create a learning environment that works for them, at university, in the library or at home;
 - encourage learners to share successes and support each other;
 - create learning that is stimulating, visually compelling that recognizes different learning styles;
 - integrate online learning with other forms of learning such as direct learning.

2.8 The Results of our Language Blend

Our evaluation begins with a clear identification of the purpose or results expected from the objectives we devised at the beginning. By focusing on the purpose and results, we were guided by the reasons for which the training program had been initially developed and the changes and improvements in learner performance that should result. At all times we were aware of the knowledge, skills, and attitudes needed by the learners. Consequently, our evaluation considers the design of training developed to achieve the identified results. A comprehensive evaluation plan matching the identified knowledge, skills, and attitudes (outcomes) to the sequence, activities, and resources that have been developed to achieve those outcomes (process), and most important of all, evaluate the materials in order to discard or modify those whose effectiveness has not been completely or satisfactorily proved or are yet to be proved. In that way, our evaluation can be used to determine not only if the desired outcome was achieved but also if the related training strategy was effective.

Bearing all of this in mind, we have observed that not only has the learning curve in the last three academic courses we have been working in Moodle risen considerably, but more importantly, the number of students who use the LMS has also risen, both to achieve competence in what will later be part of their final test, and obtain the two marks which, on average, is what we give them, depending on the subject and the amount of exercises uploaded, for doing all the activities in the LMS. There is a need, especially at the beginning of any project, to award its frequent use with some extra points: this we did, and by doing so, we created the need to use the LMS, and it is now something we and they cannot do without.

3. Homework and motivation

One of the complaints most often made by parents is that their kids get bored with homework and do it reluctantly because they don't see the point of so many uncreative tasks. Behind this widespread feeling is the undeniable fact that students very rarely find themselves motivated by homework. Instead of repetitive exercises that are usually done when they are most tired, students prefer tasks which not only develop their skills, but let them relate themselves with other kids, make them feel autonomous and provide them with the opportunity of being original and creative (Anderman and Midgley, 1; Strong et al., 2). Taking advantage of what we know about motivation, any task (either for homework or to be done in the class) can be improved if:

It is related to the kids' everyday life and it clearly shows in which contexts the acquired knowledge can be applied (Lumsden, 1994; Skinner and Belmont, 1991).

It gives students a role in the process of learning (Brooks et al., 1998), i.e.: assessing other kids' work, offering them a wide range of activities to choose from, offering them the opportunity of working by themselves or in group, etc.

The tasks are suggestive, accessible and diversified. Tasks which are too difficult or repetitive are counterproductive because they discourage students and make them feel that their effort is worthless.

The tasks should give students the opportunity of contrasting their own point of views with those of other students (Strong, Silver and Robinson, 1995).

The ideas presented in this section will be better understood if we provide some background on the homework topic.

In 2004 the University of Michigan (Burby, 2006) carried out a survey among 2900 children all across the United States to establish how much time they devoted to their homework, and then compare it with previous estimates. The survey found out that homework had grown 51 % from 1981 to 2004. In 1981, kids between 6 and 8 years old devoted on average 52 minutes per week to homework. By 1997, it had already reached 128 minutes per week, and it has not stopped growing since then.

Working along the same line, Duke University compared the results of over 60 empirical studies dealing with homework and reached the conclusion (Strauss, 2006) that homework may have a positive effect on students' performance, but more clearly during the high-school years than during primary school. The above-mentioned studies agree that homework is an important part of the educational process, but when given in excess they are bad, no matter the student's age. Research has provided support for the well-known 10 minutes rule: first year kids should get 10 minutes homework every day; second year kids should add ten more to make a total of 20 minutes; third year kids may go up to thirty; and so on. It is a golden rule that helps both teachers and families, because it is predictive and let them know in advance that last year students at a high school will get two hour homework. Homework exceeding the ten minute rule leads nowhere but to students' frustration and exhaustion.

Why is homework more useful for primary school kids than for high school students? Because kids find it difficult to concentrate and they lack habits. Then, primary school homework may have a different aim, which is to teach students how to manage their own time and how to develop basic skills. An evident conclusion can be inferred from what we have been saying: homework may be important for all kids, but not all should do the same tasks or the same amount of tasks. Homework should be adapted to the individual and family circumstances of each child. Next, it is of the utmost importance to keep this principle in mind: little homework, easy to do, occasionally involving parents, and when possible related to kids' interests such as sports, the Internet, friends, etc.

On the other hand, many teachers admit that they were never trained in designing truly useful tasks; and many of them have the deeply rooted impression that tasks which don't help kids to understand the world they live in are useless because, in the end, they become something too mechanical or abstract. Burby (2006) quotes an experienced headmaster saying that sometimes, after learning how to solve a problem in class, kids are asked to do twenty more problems at home, all identical to the first one. That is a senseless task, and a mistake often made by many well-intentioned teachers, simply because they believe that intensive practice is the only way to fix knowledge in the kids' minds. However, research has proved that kids take about three weeks to forget what they learnt, no matter how much practice they do. In contrast to senseless tasks, meaningful tasks develop or complement whatever kids learnt in the classroom, especially when they are given the opportunity to share their discoveries with other kids.

As for the students' opinions, surveys in the US have also proved that 60% of 10 year old kids have a negative attitude to homework, considering it more boring than activities in the classroom. Experts believe that this poor opinion finds its origin in the fact that homework is done individually whereas classroom activities are usually done in group. In fact, it has been proved that, while doing homework in group, children pay more attention to the tasks

and find them more interesting. Finally, there is also a social side to homework, as middle and upper class families tend to attach great importance to it, even when they disagree with homework or are overtly against it. However, lower class families usually turn their backs on homework and the school system, an attitude which in the end widens the social breach and puts their children at a greater disadvantage.

3.1 Features and Advantages of E-homework

Perhaps the solution to the problems raised lies in the correct implementation of "blended learning", an approach to learning which has proved successful in many situations, including tiresome, unproductive homework

According to Thorne "the underpinning principles of blended learning are no different from any other form of learning. The key criteria are based on the following:

1. Identifying the core learning need.
2. Establishing the level of demand/timescale.
3. Recognizing the different learning styles.
4. Looking creatively at the potential of using different forms of learning, i.e. matching the learning need to different delivery methods and identifying the best fit.
5. Working with the current providers, internal and external, to identify the learning objectives and to ensure that the provision meets the current need.
6. Undertaking an education process and developing a user-friendly demonstration to illustrate the potential of blended learning.
7. Being prepared to offer follow-up coaching support.
8. Setting up a monitoring process to evaluate the effectiveness of the delivery" (Thorne, 2003 pp.35-36).

Those who embark in a "blended learning" experience very soon start to feel the effects and manifold energies at work in the type of instruction we want to implement, which, on the other hand, is typical of blended learning:

In-person classes are modified and are shorter and more effective. We felt less pressure to "cover the material" during the classes, since we have a more elastic window of opportunity for knowledge transfer.

The content we present during the classroom section shifts in format. We have fewer lectures in the classic format and give more interaction. There is less teacher-centered instruction and more case studies, workgroups, and learner-driven content. In other words, the classroom is used for practical activities and presentations and pure information transfer. Oral/aural exercises which simulate real situations and which develop language competencies, written exercises, etc., are shifted to on-line delivery and practice. The intensity of the learning experience for the learner increases dramatically. There is an increase of the levels of learner-to-trainer questions, increased levels of learner-to-learner interactions, and more total hours of learner attention than in pure classroom delivery. The work of the instructor increases dramatically and depending on the number of students in the classroom our work triples because we have to "build" the exercises, test them and put them on-line. Then we have to solve the many questions the students have on doing the activities and prepare the face-to-face lectures, which should centre on practical interaction activities and develop production abilities.

The benefits of this type of learning have an immediate and direct bearing on the way a learner acquires knowledge and retains it. Using online learning within a blended solution

helps to focus on the individual and his/her interaction with learning technologies, using the Internet.

There are some advantages to be gained from using blended learning to avoid repetitive, useless tasks:

learning is more targeted, focused, delivered bite-size, just-in-time; learners can interact with their tutor/lecturer individually;

learners can interact with their peers through communication resources such as "forums", news, or email;

learning materials are readily accessible anytime, anywhere and those who want to learn have a system where they can practise for as long as they want to;

a variety of techniques can be utilized by maximizing different technologies.

There are very few disadvantages, but there are aspects to be aware of when introducing blended learning:

identify the support networks, both technical helplines and coaching support;

encourage learners to recognize how they learn best, and that they should create a learning environment that works for them, at school or at home;

encourage learners to share successes and support each other;

create learning that is stimulating, visually compelling and one that recognizes different learning styles;

integrate online learning with other forms of learning such as direct learning;

avoid repetitive activities that lead to the same reflection or afterthought as other activities dealing with the same topic;

instructors, teachers, etc., must identify the correct academic level of their students and their motivation for learning and prepare activities which are engaging, eye-catching and productive for them; otherwise we run the risk of falling into the same murky pit of boredom and ineffectiveness as with repetitive unproductive homework.

3.2 A Case in Point

A practical example is being carried out in a primary school in Ibi (Alicante) in the English Classroom and the results are promising:

The authors, working full time as inspector and language advisor, got in contact with several primary schools and held meetings with their teachers. Responses varied from cold to warm. We began working with those who were ready to make the initial effort of establishing an LMS.

The platform was devised with all the above-mentioned precepts in mind: It included a clear statement of our expectations.

The starting point was an initial assessment. As the platform offered a wide range of tasks, everybody could have a task suited to his/her abilities. This worked very well for students with learning difficulties.

It also established a value for all the completed homework, with a heavy emphasis on achievement rather than on punishment.

Every task included an estimate of the time needed to complete. This estimate was an interval wide enough to include both the fastest and the slowest students. Moreover, students had the option to add commentaries in case they thought the time estimate was wrong.

For every task there was a clear explanation of its purpose and the procedure to follow. Then, as the tasks are self-correcting, students could check at any moment whether they were doing well. There is also (a) the hint option, which offers a clue to help students find the answer by themselves.

An LMS with self-correcting activities gives students and parents the advantage of constant and updated feedback. At any time, parents can check whether their kid is doing well. What's more, all the tasks can be done once and again until each student achieves perfection. It is a kind of miracle: homework, which was generally considered forced labour, suddenly becomes a labour of love. Nintendo effect.

All the tasks offered solved examples, which could be consulted in case of doubt. Moreover, there are links related to the grammar and the lexis practised before each exercise so that students may revise before they actually carry it through. Results so far have proved that: The number of students who don't complete homework is much lower now than it used to be.

The school offers their own computers to families who do not have an Internet connection at home. The computer room is open and supervised everyday between 12.00 and 13.00 and between 17.00 and 18.00.

Additionally, low-income families find the advantage that the platform includes a whole section of remedial materials. Thus, their kids can catch up without having to pay for private lessons

Regular self-assessment and co-assessment promotes learning. Assessment then is not only diagnostic, but also formative.

Students work better when they have no doubts about the goal of the task and the way it will be marked.

Students are given many possibilities to prove they are actually learning, which greatly encourages them to keep on learning.

4. Students with Special needs

All through this section, the term "special needs" refers to students who have been diagnosed as having specific learning problems, whatever their nature may be. These students leave their respective groups for a number of hours every week to join specific programs or to receive individual or small group lessons so that they may acquire the basic skills. Our LMS was specifically devised for the individual or small group lessons. We had observed that, for most special needs students, the time devoted to this purpose ranged between one third and one half of school time. Very often, this time is spent with a teacher doing remedial work on core subjects (Language and Maths above all). Many of the students we talked to said they had been doing the same kind of exercises for years. They seemed to have developed a knack for answering without making any effort to understand whatever they had been asked.

The repertoire of tasks we built let these students work on their own while being monitored by a teacher. The tasks were devised to cater for the students' diversity and for their different learning styles. They included visual information and abundant feedback in the form of (Vovides at al. 2007: 71) "stop and think triggers and feedback loops"; that is, all exercises are connected to an explanation and to other exercises which either reinforce their learning or help them achieve the learning goal. The tasks provide ample scaffolding so that

the students can build an adaptive route to learning. Or said with other words, all exercises are graded and referred to a scale of difficulty; students choose among the many possibilities those that better fit their competence and are occasionally referred to a higher level to avoid stabilisation (where no progress occurs) or, even worse, fossilization (where errors become embedded in the students' minds). Finally, the tasks were also very progressive, starting with very simple questions and leading up to authentic tasks with a very high transfer value, because the ultimate objective of education must always be to prepare students for the world beyond school.

4.1 Why with Moodle?

In our opinion, special needs students are at a disadvantage in everyday lessons because of the combination of two factors: their individual traits (low intelligence, social conditions, disabilities, etc.) and traditional priorities at schools. Let's analyse the latter: most teachers organise their lessons around a textbook, a fact which stresses content and leaves other skills such as meaning making and transfer in second place. This is often referred to as the climb-the-ladder approach and it is believed (Wiggings and McTighe, 2008: 37) to have "a negative impact on low-achieving students [who] are often confined to a regimen of excessive teacher talk, rote memorization of discrete facts, and mind-numbing skill-drill worksheets". In contrast to such a dismal picture, Learning Management Systems, in our case Moodle, are powerful tools when it comes to dealing with special needs students for all the reasons mentioned in the previous sections, but also because they guarantee students' engagement due to the many potential benefits we have at hand:

- **Increase student engagement in the curriculum** - When students see their results immediately, they are more likely to be interested in the outcome than when they have to wait days for a grade.
- **Provide detailed and immediate feedback** - Students may be presented with scores and explanations immediately if desired. Marking for some types of assessment item can be automatic. Hinting can be implemented if appropriate.
- **Retaking and redoing** - Exercises or test can be retaken or redone as many times as the teacher allows students to do so, with the advantage that questions and answers can be reshuffled and randomized so that every time the test or exercise is loaded a seemingly new task appears.
- **A painless way to integrate technology** - Often teachers are encouraged to use technology in the classroom but don't have the time or resources they need to implement their technology plans. Moodle provides an easy way to begin using technology on a regular basis -- without using extra time or resources.
- **Location and time independent** - Students can do an exercise or take a test from anywhere that provides access to the Internet, during whatever time period you specify, using their own equipment if desired. Students can use Moodle while on holiday or home sick.
- **Automatic score recording** - Moodle scores exercises and tests (with the exception of essay questions) automatically. These scores are logged into the online Gradebook and are immediately visible for student access. This takes the responsibility of grading and recording off of the instructor or Teacher.
- **More frequent assessments** - Increased assessment may help instructors more accurately gauge student learning.

- **A time-saver** - Online assessment and testing saves teachers grading time. More importantly, online testing saves instructional time, both in class and out. Often students can complete online tests in less time than it takes to complete pen-and-paper tests. The extra time can be used for higher-order thinking projects that apply the material on the tests!
- **Practice with technology-based test formats** - Many standardized tests can now be taken on a computer. The skills necessary for taking tests digitally (whether using software or the Internet) are different from those required for pen-and-paper tests. Many computerized tests, for example, don't allow students to return to a question after submitting an answer. The first guess, therefore, must be the best guess. Using online assessment introduces students to those emerging test strategies.
- **Introduction of website and media** - This can include sound, video, images, animation, and interactivity. These can be useful for problem solving simulations, challenging critical thinking and for students with different learning styles or special needs.
- **Timeliness** - When and how long the assessment is available is controlled by the instructor. If you are using the assessment as a learning check, the timing can be set up so that the assessment is available immediately following class time. Students can test themselves on material and if necessary access additional assistance while the content is still fresh in their minds.

4.2 What did we do?

We devised tasks with meaning and transfer in mind. For students who very seldom achieve academic success, transfer is of the utmost importance as it ensures that whatever they learn can be used beyond school walls. Those tasks were built with some principles of differentiated instruction in mind (Wormelli, 2006: 14): treating academic struggle as strength, providing opportunities for self-definition and creative expression, allowing multiple pathways to standards, and giving formative feedback. Let's give some specific examples of the just-mentioned principles:

Treating academic struggle as strength: all tasks in Moodle can be done once and again until perfection is achieved. Students are not penalised if they get a low mark the first time, but are invited instead to try again and learn from previous mistakes. If they are stuck, they can make use of the hint option, which provides a clue to the answer. Then, there is also the possibility of working cooperatively with other students through the discussion forum, where questions can be asked and opinions shared. As a last resort, students can also contact their teachers through the e-mail option. There is a powerful lesson implied here for real life: a setback should encourage us to work harder or find the help of people around us. When faced with difficulties, one keeps trying and never gives in.

Providing opportunities for self-definition and creative expression: we offered these students the option of digital storytelling. Storytelling has emerged as one of the fundamentals of human conscience through which we craft our inner selves: with our stories, we tell others and ourselves who we are and what we think. According to Tsou et al. (2006) digital storytelling is a creative language learning technique that can improve student's level of learning in reading, writing, speaking and listening. Besides, Gils (2005) suggested many advantages of using digital storytelling in education: (1) to provide more variation than traditional methods in current practice; (2) to personalize learning experience; (3) to make explanation or the practicing of certain topics more compelling; (4) to create real life situations in an easy

and cheaper way; and (5) to improve the involvement of students in the process of learning. Our students told others about their own experiences, creating a fabric with visual and textual elements. They also loved transforming an abstract topic into a concrete story, for example from world resources to an intrigue about the wealth of oil producers and the exploitation of foreign workers in some countries.

Allowing multiple pathways to standards: Thanks to its many tasks and multiple individual paths, our platform fosters real learning, which always has a degree of messiness, of unpredictability. The finishing line is long and cumbersome, it is made up of trials, errors and revisions. As already explained, students can build customized routes to learning thanks to the adaptive dimension of the platform (all tasks are graded and interconnected). Learning becomes a process of discovery, in which boldness is rewarded and passivity is penalised. Students find connections between the constantly changing images of a video game and the possibility of choosing their own personal way to the established goals. *Giving formative feedback:* One of the most remarkable features of our platform is that it offers constant feedback, which can be used to identify students' learning and target their educative needs more efficiently. The stop and think triggers and feedback loops help students share responsibility for their own learning. At any given moment, they know whether they are on the right track and can consequently catch up before it is too late.

4.3 What did we achieve?

In a recent survey, the *Educational Leadership* journal (2008: 48-51) asked a selection of students from different schools across the United States what exactly they expected from their teachers. The former came up with the following answers: they wanted their teachers to take them seriously, challenge them to think, nurture their self-respect, point them towards their goals, build on their interests and tap their creativity. Some of these demands are clearly met by our own proposals. By using an LMS, students can face tasks which are above their individual capacity by working cooperatively in small groups; they can also learn faster as they work in a digital environment which somehow resembles the one they use in their spare time. As they feel more confident, they can be more creative and discover for the first time that school can provide them with efficient tools for the real world. It is the transformation of compliant passive learners into engaged learners as described by Zmuda (2008). As several of the students in the project said, for the first time in their school years they enjoyed the tasks and had a clear perception that they were useful for real things in real life.

5. Conclusion

At a time when the importance of data in education is being underlined from different quarters, our platform provided teachers and students with relevant data so as to target instruction more effectively or to determine which activities work and which don't. Likewise, interactive tasks engage students much more than traditional tasks, which means that students take charge of their own learning. They also enjoy progressing at their own pace and establishing their own goals.

By using Moodle and blended learning we immediately noticed how quickly students were attuned to the system's layout and the new learning scenarios, which by no means took us by surprise. We suspected, and now we know, that Moodle meets up perfectly with the

characteristics of today's youngsters, whether they be university students or those in primary or secondary schools, and how well they respond to clear, immediate and consistent expectations, how well they got used to working in the new technological environment and how much they favour the change.

For us teachers, professors or lecturers, blended learning has meant a new stimulus to reflect on actual learning. We have evolved from being simple "information transmitters" to "facilitative teachers" who design active learning by means of taking into account the needs of many of our students. By doing so, we have designed an LMS for meeting the requirements of these students within the value system they embrace.

6. References

- Adler, Mortimer (1984). *The Paideia program: An educational syllabus*. Ney York: MacMillan.
- Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology*, 84(3), 261-271.
- Anderman, L.H. and Midgley, C. Motivation and middle school students [ERIC digest]. Champaign, IL: ERIC Clearinghouse on Elementary and Early Childhood Education. (ERIC Document Reproduction Service No. ED 421 281), 1998.
- Arcos, F. et al (2008). *The Language Blend*. INTED2008. International Technology, Education and Development Conference
- Black, S. (1996). The truth about homework. *American School Board Journal*, 183(10), 48-51.
- Brooks, S.R., Freiburger, S.M., & Grotheer, D.R. (1998). *Improving elementary student engagement in the learning process through integrated thematic instruction*. Unpublished master's thesis, Saint Xavier University, Chicago, IL. (ERIC Document Reproduction Service No. ED 421 274)
- Burby, L. (2006). The Great Homework Debate. *Newsday*. September 17, 2006.
- Clark, R., Mayer, R. (2008). *E-learning and the Science of Instruction*. San Francisco. Pfeiffer.
- Dudeney, G., Hockly, N. (2007). *How to... teach English with technology*. Edinburgh. Pearson Longman.
- Dziuban, Ch., Hartman, J., Moskal, P. (2004). Blended Learning. Educause Center for Applied Research, Volume 2004, Issue 7.
- Garbe, G. and Guy, D. (2006). No Homework Left Behind. *Educational Leadership*, Summer 2006, Volume 63.
- Gils, F. (2005). Potential applications of digital storytelling in education. In *3rd Twente Student Conference on IT*, University of Twente, Faculty of Electrical Engineering, Mathematics and Computer Science, Enschede, February 17-18.
- Harrison, C. and Killion, J. (2007). Ten roles for Teacher Leaders. *Educational Leadership*, 65(1), 74-77.
- Hunt, M., S. Neill and A. Barnes. (2007). The use of ICT in the assessment of modern languages: the English context and European viewpoints. *Educational Review*, Vol. 59, No. 2, May, pp. 195-21
- Loaiza, Reina et alter. (2004). "Metodología para la implementation de Proyectos E-Learning. Version 1". Carabobo, Servicios de publicaciones de la Universidad de Carabobo.
- Lumsden, L.S. (1994). *Student motivation to learn* (ERIC Digest No. 92). Eugene, OR: ERIC Clearinghouse on Educational Management. (ERIC Document Reproduction Service No. ED 370 200)

- Masie, Elliott (2002). "Blended Learning: The Magic Is in the Mix." In Allison Rossett The ASTD E-Learning Handbook, (p. 60-65). New York. McGraw-Hill Professional.
- McTighe, J.; and K. O'Connor (2005). Seven practices for effective learning. *Educational Leadership*. November, vol 63, number 3; pages 10-17.
- Mintzberg, H. (1989). *Mintzberg on Management, Inside our Strange World of Organisations*. New York: Free Press.
- Ortega, P., and Arcos, F. (2008). How e-homework can solve the homework debate in primary schools. *ENMA2008. International Conference on Engineering and Mathematics*, pgs 5-10. Bilbao: Kopiak.
- Patton, J.R. (1994). Practical recommendations for using homework with students with learning disabilities. *Journal of Learning Disabilities*, 27(9), 570-578.
- Paulu, N. (1998). *Helping your students with homework: A guide for teachers*. Washington, DC: U.S. Department of Education, Office of Educational Research. Retrieved September 19, 2000, from the World Wide Web: <http://www.ed.gov/pubs/HelpingStudents/>
- Peetsma, T.; M. Vergeer, J. Roeleveld and S. Karsten (2001). Inclusion in Education: comparing pupils' development in special and regular education. *Educational Review*, Vol. 53, No. 2, 125-134
- Prensky, M. (2008). Turning on the lights. *Educational Leadership*, 65(6), 40-45.
- Skinner, E., & Belmont, M. (1991). *A longitudinal study of motivation in school: Reciprocal effects of teacher behavior and student engagement*. Unpublished manuscript, University of Rochester, Rochester, NY.
- Richardson, W. (2008). Footprints in the digital age. *Educational Leadership*, 66(3), 16-19.
- Sadik, A. (2008). Digital storytelling: a meaningful technology-integrated approach for engaged student learning. *Education Tech Research Dev* 56:487-506.
- Strauss, V (2006). As Homework Grows, So Do Arguments Against It. *Washington Post*. Tuesday, September 12, 2006; Page A04
- Strong, R., Silver, H.F., & Robinson, A. (1995). What do students want? *Educational Leadership*, 53(1), 8-12.
- Tsou, W., Wang, W., & Tzeng, Y. (2006). Applying a multimedia storytelling website in foreign language learning. *Computers & Education*, 47, 17-28.
- Vovides Y., S. Sanchez-Alonso, V. Mitropoulou, G. Nickmans (2007). The use of e-learning course management systems to support learning strategies and to improve self-regulated learning. *Educational Research Review* 2 (2007) 64-74
- Wiggins, Grant and Jay McTighe (2007). *Schooling by Design*. Alexandria: ASCD.
- Wiggins, Grant and Jay McTighe. (2008). Put understanding first. *Educational Leadership*, 65(8), 36-41.
- Thorne, Keye (2003). *Blended Learning: How To Integrate Online and Traditional Learning*, Kogan Page Limited, London.
- William H.R. (2007). *Moodle Teaching Techniques*. Birmingham. Packt Publishing.
- William H.R. (2006). *Moodle*. Birmingham. Packt Publishing.
- Wormelli, Rick. (2006). Differentiating for tweens. *Educational Leadership*, 63(7), 14-19.
- Zhang, D., Zhao, J., Zhou, L., & Numamaker, J. (2004). Can e-learning replace classroom learning? *Communication of the ACM*, 47(5), 75-78.
- Zmuda, Alison. (2008). Springing into active learning. *Educational Leadership*, 66(3), 38-42.



Technology Education and Development

Edited by Aleksandar Lazinica and Carlos Calafate

ISBN 978-953-307-007-0

Hard cover, 528 pages

Publisher InTech

Published online 01, October, 2009

Published in print edition October, 2009

The widespread deployment and use of Information Technologies (IT) has paved the way for change in many fields of our societies. The Internet, mobile computing, social networks and many other advances in human communications have become essential to promote and boost education, technology and industry. On the education side, the new challenges related with the integration of IT technologies into all aspects of learning require revising the traditional educational paradigms that have prevailed for the last centuries. Additionally, the globalization of education and student mobility requirements are favoring a fluid interchange of tools, methodologies and evaluation strategies, which promote innovation at an accelerated pace. Curricular revisions are also taking place to achieved a more specialized education that is able to responds to the society's requirements in terms of professional training. In this process, guaranteeing quality has also become a critical issue. On the industrial and technological side, the focus on ecological developments is essential to achieve a sustainable degree of prosperity, and all efforts to promote greener societies are welcome. In this book we gather knowledge and experiences of different authors on all these topics, hoping to offer the reader a wider view of the revolution taking place within and without our educational centers. In summary, we believe that this book makes an important contribution to the fields of education and technology in these times of great change, offering a mean for experts in the different areas to share valuable experiences and points of view that we hope are enriching to the reader. Enjoy the book!

How to reference

In order to correctly reference this scholarly work, feel free to copy and paste the following:

Francisco Arcos and Pablo Ortega (2009). Adaptive Blended Learning: A Literature of Assets, Technology Education and Development, Aleksandar Lazinica and Carlos Calafate (Ed.), ISBN: 978-953-307-007-0, InTech, Available from: <http://www.intechopen.com/books/technology-education-and-development/adaptive-blended-learning-a-literature-of-assets>

INTECH
open science | open minds

InTech Europe

University Campus STeP Ri
Slavka Krautzeka 83/A
51000 Rijeka, Croatia
Phone: +385 (51) 770 447
Fax: +385 (51) 686 166

InTech China

Unit 405, Office Block, Hotel Equatorial Shanghai
No.65, Yan An Road (West), Shanghai, 200040, China
中国上海市延安西路65号上海国际贵都大饭店办公楼405单元
Phone: +86-21-62489820
Fax: +86-21-62489821

www.intechopen.com

IntechOpen

IntechOpen

© 2009 The Author(s). Licensee IntechOpen. This chapter is distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike-3.0 License](https://creativecommons.org/licenses/by-nc-sa/3.0/), which permits use, distribution and reproduction for non-commercial purposes, provided the original is properly cited and derivative works building on this content are distributed under the same license.

IntechOpen

IntechOpen